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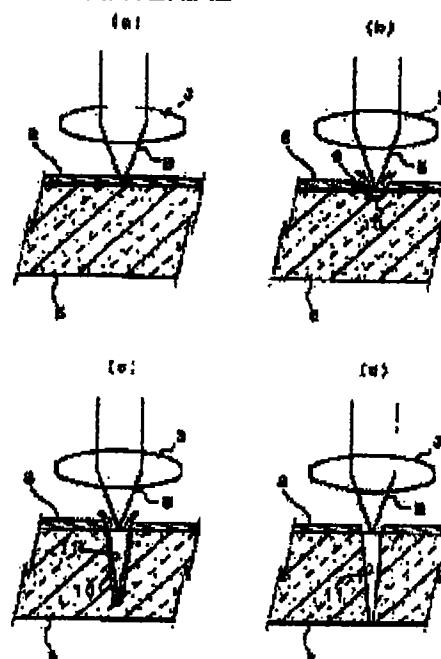
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(54) LASER BEAM MACHINING METHOD FOR TRANSPARENT MATERIAL**(57) Abstract:**

PROBLEM TO BE SOLVED: To provide a laser beam machining method for transparent material which is practical in industrial use and capable of forming a fine deep hole speedily, inexpensively with high quality and high precision on a transparent material such as various glasses by a low output laser beam.

SOLUTION: A pigment 8 is stuck on a glass substrate 6 surface in an uniform thickness, the surface is irradiated with a Q switch pulse oscillation YAG laser beam B of a single mode consisting of a basic wave, a second harmonic wave or a third harmonic wave. The pigment absorbs laser energy of a first one or more of pulses, a plasma state of high temp/high pressure is generated on the glass substrate surface, a surface layer glass is fused/removed to form a recessed part 9, further, its surrounding is modified to a composition liable to absorb a beam. The modified layer 10 absorbs subsequently irradiating laser beams to be fused/removed, thus, a fine hole 11 piercing the glass substrate is formed.

**LEGAL STATUS**

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